



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Stevenson  
#6  
11-2-01

Applicant: Angelo Mascarenhas )  
Serial No.: 09/841,691 ) Art Unit:  
Filing Date: April 24, 2001 ) Not Yet Accorded  
Title: ISOELECTRONIC CO-DOPING ) Examiner:  
Atty File No.: NREL 99-50 ) Not Yet Accorded

**INFORMATION DISCLOSURE STATEMENT UNDER 37C.F.R. § 1.97(c)**

To: Assistant Commissioner for Patents  
Washington, DC 20231

Dear Sir:

The applicants hereby submit their Information Disclosure Statement pursuant to 37 C.F.R. §§ 1.56, 1.97 and 1.98 and respectfully request the Examiner to consider the information disclosed in the references listed below:

In the opinion of the undersigned, the below-listed citations represent the closest art known to the undersigned during preparation of the above-identified application. These citations may be material to the examination of the subject application and are therefore submitted in compliance with a duty of disclosure defined in 37 C.F.R. §§ 1.56, 1.97 and 1.98.

**CITATIONS**

<u>Patent No.</u>	<u>Date Issued</u>	<u>Inventors</u>
6,002,202	December 14, 1999	Meyer <i>et al.</i>
5,986,288	November 16, 1999	Hasegawa
5,963,571	October 5, 1999	Wingreen
5,895,225	April 20, 1999	Kidoguchi <i>et al.</i>
5,776,793	July 7, 1998	Lee <i>et al.</i>

5,728,231	March 17, 1998	Negami <i>et al.</i>
5,453,404	September 26, 1995	Leedy
5,387,544	February 7, 1995	Hayafuji
5,344,791	September 6, 1994	Huang
5,231,298	July 27, 1993	Daly
5,158,896	October 27, 1992	Burroughes <i>et al.</i>
5,116,455	May 26, 1992	Daly
5,028,561	July 2, 1991	Kamath <i>et al.</i>
4,939,103	July 3, 1990	Szolgyemy
4,591,654	May 27, 1986	Yamaguchi <i>et al.</i>
4,400,221	August 23, 1983	Rahilly
4,284,962	August 18, 1981	Esterowitz <i>et al.</i>

#### ARTICLES

Oe, K. and Okamoto, H., "New Semiconductor Alloy  $\text{AgAs}_{1-x}\text{Bi}_x$  Grown by Metal Organic Vapor Phase Epitaxy", *Japanese Journal of Applied Physics*, Vol. 37, pp. L1283 - L1285, November 1998.

Yamamoto, T. and Katayama-Yoshida, H., "Solution Using a Codoping Method to Unipolarity for the Fabrication of *p*-Type ZnO", *Japanese Journal of Applied Physics*, Vol. 38, Pt. 2., No. 2B, pp. L166 - L169, February 1999.

Ploog, K. H. and Brandt, O., "Doping of group III nitrides", *Journal of Vacuum Society Technology A*, Vol. 16, No. 3, pp. 1609, August 1998.

Yamamoto, T. and Katayama-Yoshida, H., "Role of Cl or I Codoping in Li-Doping Enhancement in ZnSe", *Japanese Journal of Applied Physics*, Part 2, No. 8A, pp. L910 - L912, August 1998.

Brandt, O.; Yang, H.; Kostial, H.; and Ploog, K.H. "High *p*-type conductivity in cubic GaN/GaAs(113)A by using Be as the acceptor and O as the codopant", *Applied Physics Letters*, Vol. 69, No. 18, pp. 2707 - 2709, October 1996.

Pankove, J.I.; Torvik, J.T.; Qui, C.-H.; Grzegory, I.; Porowski, S.; Quigley, P.; and Martin, B., "Molecular Doping of Gallium Nitride", *Applied Physics Letters*, Volume 74, Number 3, pp. 416 - 418, January 1999.

White, C.W.; Budai, J.D.; Zhu, J.G.; and Withrow, S.P., "Ion-beam synthesis and stability of GaAs nanocrystals in silicon", *Applied Physics Letters*, Vol. 68, No. 17, pp. 2389 - 2391, April 1996.

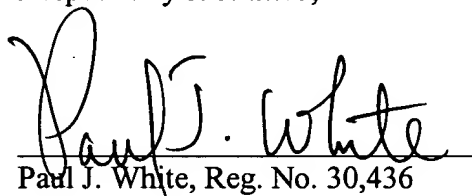
Withrow, S.P.; Holland, O.W.; Pennycook, S.J.; Pankove, J.; and Mascarenhas, A., "Beam-Solid Interactions: Physical Phenomena", *Materials Research Society Symposium Proceedings*, Volume 157, pp. 143 - 148, (1990).

Kuznetsov, V.V.; Pikhtin, A.N.; Razbegaev, V.N.; and Sorokin, V.S., "High-temperature luminescence of GaP:Bi:N", *Sov. Phys. Semicond.*, 14(4), pp. 417 - 419, April 1980.

Trumbore, M.; Gershenson, M.; and Thomas, D.G., "Luminescence due to the Isoelectronic Substitution of Bismuth for Phosphorus in Gallium Phosphide", *Applied Physics Letters*, Volume 9, Number 1, pp. 4 - 6, July 1966

Two (2) pages of Form PTO-1449 and copies of all the above-cited references are enclosed for the Examiner's convenience.

Respectfully submitted,

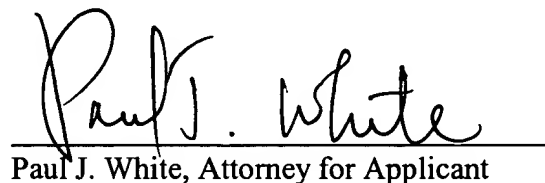


Date: July 27, 2001.

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**CERTIFICATE OF EXPRESS MAILING UNDER 37 C.F.R. 1.10**

I hereby certify that the attached Information Disclosure Statement Under 37 C.F.R. §§ 1.56, 1.97 and 1.98, PTO Form 1449, copies of all cited references, and Return Post Card are being deposited in the United States Postal Service as postage pre-paid in an envelope addressed to Box Patent Application, Assistant Commissioner for Patents, Washington, D.C. 20231, on this 27th day of July, 2001.



Paul J. White, Attorney for Applicant